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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/727,096
Filing Date: November 29, 2000
Appellant(s): MONTGOMERY, DENNIS L.

David A. Jakopin
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 24-April-2007 appealing from the Office action mailed 26-October-2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

1. The statement of the status of claims contained in the brief is correct. However, claims 22 and 26 which the Appellant lists as "Allowed claims" are indeed objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

2. In view of the Appellant's arguments presented in the Brief, some dependent claims are presently objected to for containing Allowable Subject Matter in this correspondence. Accordingly, these claims are removed from the "rejected" list and added to the "objected" list.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the Grounds of Rejection (grounds identified as A, B, and C) to be reviewed on appeal is correct. However, what the Appellant lists as Ground of Rejection under letters D through J are not Grounds of Rejection. Rather, the Appellant appears to have included these items as arguments instead of actual Grounds of Rejection.

WITHDRAWN REJECTIONS

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner:

Rejection of claims 4, 7, 19, and 54 have been withdrawn from this correspondence in view of the Examiner's indication of Allowable Subject Matter contained in these claims. See Allowable Subject Matter section under Grounds of rejection in section (9), below.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

- Ageenko et al ("*Forward adaptive modeling for context-based compression of large binary images in applications requiring spatial access,*" 1999 IEEE.
- US 6,366,289 B1 Johns April 2, 2002
- US 5,586,280 Simms December 17, 1996
- US 6,043,897 Morikawa et al. March 28, 2000

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 2-3, 6, 16-18 and 20-21, 29 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ageenko et al ("Forward adaptive modeling for context-based compression of large binary images in applications requiring spatial access," 1999 IEEE, pp 757-761, 10-24-1999) in view of Johns (U.S. Patent No. 6,366,289 B1.)

As to independent claim 17, Ageenko et al teaches a method of operating upon digital data (see *Abstract*, page 757) comprising the steps of:

partitioning the digital data into a plurality of blocks (see page 757, *Introduction*, where "tiling" is taught as "dividing the image into fixed size rectangular blocks"); and

creating a plurality of threads, such that each thread includes at least one of the plurality of blocks (see page 757, *Introduction*, where "threads" is read on "clusters"; i.e. "a better solution is to divide the image into clusters of C x C size"); and

operating upon each of the plurality of threads to obtain a plurality of compressed threads, each compressed thread including at least one compressed block of digital data (see page 758, *Forward-adaptive technique*, where "pixelwise compression of the clusters" is taught, and see page 759, *Compression-decompression*);

operating upon each of the compressed threads to eliminate each of the compressed threads and retain the compressed first blocks (see page 758, *Forward-adaptive technique*, where "independent decompression of the clusters" and providing "spatial access to the compressed image file" are taught);

creating a plurality of threads, such that each thread includes at least one of the plurality of compressed first blocks (see page 759, *Compression-decompression*, i.e., "the QM-coder is initialized and the model is restored each time that the compression of a new cluster starts"); and

operating upon each of the plurality of threads to obtain a plurality of compressed threads (see page 758, *Forward-adaptive technique*, where "pixelwise compression of the clusters" is taught), each compressed thread including at least one compressed second block of digital data (see page 759, *Compression-decompression*, i.e., "cluster indices are recorded and

stored in the compressed file to indicate the starting points of the clusters in the compressed bit stream".)

Ageenko et al does not teach first thread and second thread (although he teaches "new clusters" in page 759, *Compression-decompression.*)

Johns teaches a method of displaying compressed and uncompressed blocks (see *Abstract*), in which he teaches first threads and second threads (see column 9, lines 29-45, where first and second decompressors are taught, decompressing "chunks" for client 1 and client 2.)

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Ageenko et al by the teaching of Johns et al, because including multiple threads would enable the system to creates and process different threads (clusters) of blocks of digital data for various portions of a large digital content (e.g. an image), so that only portions of the "image" desired by the client are retrieved and operated on for faster operations. For example, using multiple threads/cluster technique allows a new part of a large image to be retrieved, decompressed and displayed, as the image is being scrolled by the user, as opposed to decompressing and displaying the entire image (see Ageenko et al, *Introduction.*)

As to claim 2, Ageenko et al as modified, teaches wherein the step of operating upon each of the first threads performs lossless compression (see Johns, column 20, lines 46-54.)

As to claims 3 and 18, Ageenko et al as modified, teaches wherein the step of operating upon each of the threads independently operates upon each of the plurality of threads (see Ageenko et al, page 758, *Forward-adaptive technique*, where it is taught that "each cluster is processed independently from each other".)

As to claims 6 and 21, Ageenko et al as modified, teaches the method further comprising the step of combining the compressed blocks in each of the plurality of compressed threads to obtain digitally compressed data (see Ageenko et al, page 758, *Forward-adaptive technique*, where "pixelwise compression of the clusters" is taught; and see Johns, figure 6, and see column 14, lines 52-55, where "combining the plurality of compressed threads" is read on "compressed chunks are linked together in a linked list format".)

As to claim 16, Ageenko et al as modified, teaches wherein the step of partitioning data includes the step of determining a size of each of the plurality of blocks taking data type of each block into account (see Ageenko et al, page 759, *Effect on the compression performance*; and see Johns, column 10, lines 45-59.)

As to claim 20, Ageenko et al as modified teaches wherein, during the step of operating upon each of the plurality of threads, the same compression algorithm used to operate upon each block is also used to operate upon the corresponding compressed block (see Ageenko et al, page 758, *Forward-adaptive technique*, where "pixelwise compression of the clusters" is taught, and see page 759, *Compression-decompression.*)

As to claim 29, Ageenko et al as modified, teaches wherein each first thread has an associated first metadata set (see Johns, column 6, lines 1-6.)

As to claim 47, Ageenko et al as modified, teaches wherein each first thread further includes control signals (see Johns, column 7, lines 62-66, where "control signal" is read on "control data".)

3. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ageenko et al ("*Forward adaptive modeling for context-based compression of large binary images in applications requiring spatial access,*" 1999 IEEE, pp 757-761, 10-24-1999) in view of Johns (U.S. Patent No. 6,366,289 B1), as applied to claim 17 above and further in view of Simms (U.S. Patent No. 5,586,280.)

As to claim 11, Ageenko et al as modified, still does not teach wherein the step of creating each of the plurality of first threads uses a data type of each of the plurality of blocks so that each of the first threads contains blocks which have a similar data type.

Simms teaches the step of creating each of the plurality of first threads uses a data type of each of the plurality of blocks so that each of the first threads contains blocks which have a similar data type (see column 7, lines 11-16.)

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Ageenko et al as modified, by the teaching of Simms, because having the step of creating each of the plurality of first threads uses a data

type of each of the plurality of blocks so that each of the first threads contains blocks which have a similar data type, would enable the system to categorize data into blocks of data with common characteristics amongst the data items.

4. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ageenko et al ("*Forward adaptive modeling for context-based compression of large binary images in applications requiring spatial access,*" 1999 IEEE, pp 757-761, 10-24-1999) in view of Johns (U.S. Patent No. 6,366,289 B1), as applied to claim 17 above, and further in view of Morikawa et al (U.S. Patent No. 6,043,897.)

As to claim 14, Ageenko et al as modified, still does not teach the method further including the step of predicting an estimated compression time and estimated compression amount for each block.

Morikawa et al teaches an image forming apparatus (see Abstract), in which he teaches the step of predicting an estimated compression time (see column 2, lines 14-18) and estimated compression amount for each block (see column 5, lines 57-63.)

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Ageenko et al as modified, by the teaching of Morikawa et al, because including the step of predicting an estimated compression time and estimated compression amount for each block would enable the system to provide the user with information associated with compression of each block of data, as to how long the compression would take and how large the size of the compressed data would be after performing the operation on the block of data.

Allowable Subject Matter

5. Claims 4, 7, 19, 22, 26, and 54 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

(10) Response to Argument

The Appellant's arguments presented in the Appeal Brief filed on 24-April-2007 have been fully considered as follows:

Arguments regarding independent claim 17:

The Appellant argues that, "claim 17 is directed to a method of further compressing already compressed blocks. This is not taught or suggested by Ageenko. Different clusters are each compressed once, as in typical in the art. There is not, however, any teaching whatsoever of compressing blocks, then further compressing the already compressed blocks again. As such, Ageenko does not teach this element."

The Examiner respectfully disagrees.

Ageenko teaches a Forward Adaptive Modeling for Context-based Compression of Large Binary Images, in which he teaches the method being "a two-stage combination of forward-adaptive modeling and backward-adaptive context based compression with re-initialization (Abstract, and page 758, section 3, "Forward-adaptive technique").

Ageenko specifically teaches "compressing already compressed data" in page 759. In section 3.1, under "Model construction" heading, Ageenko teaches a "first stage", with "indices for all possible context from the model table, which is stored in the beginning of a compressed file". Here, "storing in compressed files" indicates the first compression.

In section 3.2, under the "Compression-decompression" heading, Ageenko teaches, "in the second stage, the clusters are compressed separately by the QM-coder", and that, "the compression is essentially the same as in sequential JBIG." This of course, indicates the second compression (compression of data already compressed in stage 1.)

Additionally, the Examiner notes that in the last paragraph of his document, under the "Forward-adaptive technique" heading (page 759, lines 3-4), Ageenko states, "the compression requires two passes over the image but decompression can be performed with one pass only", which not only reads on "compressing the already compressed" data, but also matches the exact same phrases used in the instant application as described in the Title of the Application: METHOD AND APPARATUS FOR ENCODING INFORMATION USING MULTIPLE PASSES AND DECODING IN A SINGLE PASS, and the Field of the Art section: "The present invention method and apparatus for encoding and decoding information, and more particularly to a method of encoding using multiple passes and decoding in a single pass."

The Appellant also argues that, "a careful reading of the Ageenko article shows that the Examiner's interpretation of Ageenko is wrong. Section 3.1 is for 'Model Construction', as shown in the highlighted heading of the article. What is meant by 'model construction' is identified previously in Ageenko, in the discussion of the 'forward Adaptive technique' that is in

Section 3 of Ageenko", and that, "clearly, the model is used not for compression, but for another purpose. As explicitly taught above, the model is used to re-initialize pointers 'when the compression of a cluster starts.' There is no teaching or suggestion that a cluster is twice compressed."

The Examiner respectfully disagrees.

Regardless of whether or not Ageenko's "model" is used for compression or re-initialization, the reference clearly teaches compression of clusters in two passes (compressing and re-compressing of already compressed clusters) as evident in sections 3.1, 3.2, and in lines 3-4 of page 759.

Further, to satisfy the Appellant's argument, assuming that the first stage includes compressing and initialization of the data (model), where the data gets (further) compressed in stage 2, the teachings of Ageenko fully satisfy the claim limitations of independent claim 17. Claim 17 recites, among other limitations:

"*operating upon each of the plurality of first threads to obtain a plurality of compressed first threads, each compressed first thread including at least one compressed block of digital data*". This is clearly read on the first stage compression taught by Ageenko in section 3.1, as detailed above.

"*operating upon each of the compressed first threads to eliminate each of the compressed threads and retain the compressed first blocks*". The Examiner interprets the "elimination of the compressed first threads and the retaining of the compressed first blocks" as the "initialization" performed by Ageenko to the "model" taught in section 3.1, on page 759.

"*operating upon each of the plurality of second threads to obtain a plurality of compressed second threads....*", which is clearly read on Ageenko's second-stage compression, as taught in section 3.2 on page 759, where Ageenko teaches, , "in the second stage, the clusters are compressed separately by the QM-coder."

The Appellant further argues that, "since Ageenko does not teach r suggest anything other than a conventional technique of compressing a cluster once, it does not teach or suggest the present invention."

The Examiner most respectfully, but strongly disagrees with the Appellant in view of the remarks and discussions detailed above. The Examiner wishes to direct the Appellant's attention to lines 3-4 of page 759 of Ageenko, where he teaches, "the compression requires two passes over the image but decompression can be performed with one pass only", where the two-pass compression is indicative of "compressing already compressed data".

In view of the above remarks and discussion, the Examiner maintains the rejection of claim 17.

Arguments regarding dependent claim 20:

The Appellant argues that, "claim 20 highlights the above distinction even more clearly, with the language 'during the step of operating upon each of the plurality of second threads, a same compression algorithm used to operate upon each block is also used to operate upon the corresponding compressed block'. This is not taught or suggested by Ageenko or Johns, as there isn't even a further compression operation on the same block."

The Examiner respectfully disagrees.

As for the "further operation on the same block", Ageenko teaches it in section 3.2, under the heading of Compression-decompression. In this section, Ageenko states, "in the second stage, the clusters are compressed separately by the QM-coder". Ageenko taught the first compression in section 3.1 of his invention under the heading of Model construction, where he stated that "indices for all possible context from the model table which is stored in the beginning of a compressed file."

As for using "the same compression algorithm", Ageenko does not explicitly teach using two different compression algorithms on the first stage and the second stage of compression. In fact, Ageenko teaches, "the compression is essentially the same as in sequential JBIG" in section 3.2 of his invention. Therefore, the Examiner concludes that Ageenko indeed uses the "same compression algorithm in "compressing"(first stage) and "further compressing" (second stage) of his two-stage compression.

Arguments regarding dependent claims 6 and 21:

The Appellant's arguments regarding "combining compressed blocks from the threads after the compression operation using the plurality of threads" being different from John's teachings of "creating a linked list of various chunks of data", where "these various chunks of data have not been previously separated and associated with various threads", have been considered but they are not deemed persuasive.

The Examiner points out that the claims were rejected over Ageenko in view of the teachings of Johns. The "separation" and "operation" of data is clearly taught by Ageenko. The

"separation" is taught by Ageenko as "dividing the image into clusters of C x C" (page 757, under Introduction section). The operation is taught by Ageenko in the "two-stage compression" as detailed above (Ageenko, section 3.1 and 3.2). The Examiner is relying on johns for the teaching of "linking" or "combining" the blocks (which were already separated and operated on by Ageenko) in order to obtain digitally compressed data. The "combining" the blocks is clearly taught in John's "compressed chunks are linked together in a linked list format", as evident in figure 6 and in column 14, lines 52-55.

Arguments regarding dependent claim 7:

Appellant's arguments presented regarding claim 7 have been fully considered are deemed persuasive. However, the arguments are deemed moot in view of the Examiner's indication of Allowable Subject Matter of this claim.

Arguments regarding dependent claims 4, 19, and 54:

Appellant's arguments presented regarding claims 4, 19, and 54 have been fully considered are deemed persuasive. However, the arguments are deemed moot in view of the Examiner's indication of Allowable Subject Matter of these claims.

Arguments regarding dependent claim 11:

For claim 11, the Appellant argues that, "the cited portion of Simms, however, does not support Examiner's rejection" of the claim limitation, "*the step of creating each of the*

plurality of first threads uses a data type of each of the plurality of blocks so that each of the first threads contains blocks which have a similar data type."

The Examiner respectfully disagrees.

As admitted by the Appellant, the cited portion of Simms specifically states that, "entities in the block access table each comprise a FLAG entry indicating the type of the entry...", which satisfies the limitation of this claim as stated above.

Arguments regarding dependent claim 14:

The Appellant argues that, "initially, Morikawa is combined with Ageenko and Johns in a manner where there would not have been motivation to do so."

The Examiner respectfully disagrees.

The motivation to modify Ageenko by the teachings of john is provided in claim 17, from which claim 14 depends. The Examiner maintains that it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Ageenko et al by the teaching of Johns et al, because including multiple threads would enable the system to creates and process different threads (clusters) of blocks of digital data for various portions of a large digital content (e.g. an image), so that only portions of the "image" desired by the client are retrieved and operated on for faster operations. For example, using multiple threads/cluster technique allows a new part of a large image to be retrieved, decompressed and displayed, as the image is being scrolled by the user, as opposed to decompressing and displaying the entire image (see Ageenko et al, *Introduction.*)

Further, the Appellant argues that, "in particular, Morikawa, however, measures the compression time for one block in order to estimate the time for compressing all of the blocks, which is not the same as 'estimating the compression time...for each block' as set forth in Appellant's claim 14."

The Examiner respectfully disagrees.

Morikawa's measurement of compression time of one block, "assumes" or "estimates" that each block compresses in "approximately" the same time as the compression time of the measured block. Morikawa uses the measurement of compressing the one block in order to estimate how long each block would take to compress, and how long the entire compression would take.

As for the motivation to combine Ageenko as modified by Johns by the teachings of Morikawa, the Examiner respectfully maintains that it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified Ageenko et al as modified (by the teachings of Johns), further by the teaching of Morikawa et al, because including the step of predicting an estimated compression time and estimated compression amount for each block would enable the system to provide the user with information associated with compression of each block of data, as to how long the compression would take and how large the size of the compressed data would be after performing the operation on the block of data.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Tony Mahmoudi/

Tony Mahmoudi
Patent Examiner
Art Unit 2165

Appeal Conference held on Tuesday, 17-July-2007 at 9:00 am EST. Agreement was reached to proceed to the Board of Appeals and Interferences.

Conferees:

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